

SECTION D.  
ANALYSIS BY SAMPLING STRATA OF  
NONPROFIT PERFORMERS' DATA



# ANALYSIS BY STRATA OF PERFORMERS' DATA

The S&E R&D performers in the Survey of R&D Funding & Performance by Nonprofit Organizations: 1996 and 1997 were sampled from five separate databases and each database was assigned a number 1 through 5. Other than the third strata, teaching hospitals, all strata had a mix of all types of nonprofit organizations. The strata results are presented below to help future researchers decide what are the best lists of nonprofit organizations and what list(s) should be used for the most efficient survey of nonprofit R&D performers. The strata in the 1996 and 1997 survey were:

## STRATA DESCRIPTION

1. 1973 survey respondents, members of the Association of Independent Research Institutes, and other large, well-known R&D performers included with certainty.
2. Non-academic nonprofit organization (NPO) recipients of Federal funding who were listed in the Codebook for the National Science Foundation's (NSF's) Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions. All respondents in Stratum 2 had received Federal funds at least once between 1974 and 1994.
3. Teaching hospitals listed by the Association of American Medical Colleges.
4. NPOs that were likely to perform R&D because of their National Taxonomy of Exempt Entities (NTEE) codes. Stratum 4 was composed of NPOs that filed Internal Revenue Form 990 and were in the same NTEE codes as the Stratum 2 S&E R&D performers. This indicated that the NPOs were likely to perform R&D.
5. NPOs that were selected from the remaining NPOs that filed Internal Revenue Service Form 990.

All NPOs in Strata 1 and 2 were included with certainty if and when the survey contractor was able to obtain current addresses for them. (Some NPOs on the lists were out of business or could not be traced anywhere in the United States.)

The survey contractor used probability proportional to size in Strata 3, 4, and 5 to select a sample. Only large NPOs were likely to be selected in the samples.

Many NPOs were on multiple lists and received multiple survey forms. In most cases NPOs were assigned to the particular stratum for which the NPO returned the coded survey form.

## R&D REPORTED BY STRATUM

Stratum 1 accounted for 41 percent and Stratum 2 accounted for 36 percent of the 1997 R&D reported in the survey. Thus, the first two strata accounted for almost 77 percent of the survey's R&D. The last three strata required considerable survey work and follow-up yet they accounted for only 23 percent of the total R&D. Stratum 3, teaching hospitals, reported 3 percent of the R&D. The contractor had a particularly difficult time identifying a knowledgeable person within hospitals, reaching him/her by telephone, and obtaining the hospitals' participation in the survey. (Hospitals, hospital-like NPOs or hospital-affiliated NPOs were represented in all strata of the survey sample.) Strata 4 and 5, which required much survey effort since many of the sampled organizations were unfamiliar with NSF and with research and development, contributed only 17 and 4 percent, respectively, to the R&D totals. These results suggest that future R&D surveys of nonprofit organizations might focus on the first two or three strata for the most efficient use of resources.

## STRATA AND AMOUNTS OF FEDERAL FUNDING

The Federal Government provided half of all R&D funds used by the nonprofit organizations in 1997. There was considerable variance among the nonprofits from the five sample lists in the percentage of their R&D that was federally funded. NPOs in Strata 4 and 3 reported the lowest levels of Federal funding:

Percent of NPOs' intramural R&D performance funds provided by Federal Government in 1997

Strata	Percent
Total, all strata	50
1. 1973 respondents + Certainty	63
2. Federal funds recipients	53
3. Teaching Hospitals	34
4. NTEE targeted codes	17
5. Sample of remaining NPOs	55

Tables D-1 and D-2 provide R&D expenditure totals for each sampling strata, distributed by broad source of funding (Federal and non-Federal) and character of work (basic research, applied research, and development). Tables D-3 and D-4 provide R&D expenditure totals for each sampling strata, distributed by detailed source of funding.

## NUMBER OF RESPONDENTS RECEIVING FEDERAL FUNDS

One hundred and ninety-nine of the 233 respondents reported receiving Federal funds in either 1996 or 1997. This is 85 percent of the 233 respondents.

One hundred and ninety-six received Federal funds in both years. One received Federal funds in 1996 but not in 1997; two received Federal funds in 1997 but not in 1996.

Several large NPOs did not receive any Federal funds for R&D in either year. If NSF only collected R&D data from NPOs that received Federal funds, as listed in the Codebook for the NSF Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions, NSF would have missed these four major performers of more than \$10 million a year each:

Howard Hughes Medical Institute  
Summer Institute of Linguistics  
The Conference Board  
Samuel Roberts Noble Foundation

All but the Summer Institute of Linguistics were included in the 1973 survey and were in Stratum 1. If the 1996 and 1997 survey had been limited to the first two strata, three of the four large NPOs that did not use Federal funds would have been included in the survey.

Fifteen additional NPO respondents performed over \$1 million a year in R&D but did not receive any Federal funds. These 15 NPOs and their R&D would have been missed if the survey sample had been drawn only from Stratum 2, organizations listed in the NSF's Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions.

## TYPES OF ORGANIZATIONS AMONG STRATA

Survey respondents were asked to classify themselves into one of the nine following types of organi-

zations: research institutes; university-affiliated hospitals; other voluntary non-profit hospitals; professional or technical societies or academies of science and/or engineering; private foundations; science exhibitors; trade associations, industrial consortia; or academic consortia.

Stratum 1 had seven types of organizations; Stratum 2 had all nine types; Stratum 3 had three types; Stratum 4 had four types and Stratum 5 had two types. All nine types of organizations were included in the first two strata.

## FIELDS OF SCIENCE AND ENGINEERING BY STRATA

All five strata reported the majority of their 1996 and 1997 R&D being performed in the life sciences, which include medical and health sciences, biological sciences and—to a small degree—agricultural sciences (tables D-5 and D-6).

In 1997, NPOs in Stratum 5 (sample of remaining NPOs) reported that they budgeted 99 percent of their R&D for medical and health sciences; NPOs in Stratum 3 (teaching hospitals) used almost 98 percent for medical and health sciences while NPOs in Stratum 4 (targeted NTEE codes) used 73 percent. NPOs in Stratum 1 used 52 percent of their funds for medical and health science and NPOs in Stratum 2 (recipients of funds from various Federal agencies) used 56 percent for medical and health sciences R&D. Strata 1, 2 and 4 spent additional funds on R&D in the biological sciences.

In 1997, NPOs in Stratum 4 (targeted NTEE codes) used almost 11 percent of R&D funds for environmental and earth sciences R&D while NPOs in Strata 1 and 2 spent considerable funds on engineering, social sciences, mathematical and computer sciences, and physical sciences R&D.

## EXTRAMURAL R&D FUNDING BY STRATA

Respondents in all 5 strata reported they funded extramural R&D in both 1996 and 1997. Stratum 1 (1973 respondents, Association of Independent Research Institute members, and certainty NPOs) funded \$722 million in extramural R&D in 1997 while Stratum 2 (Federal funding recipients) provided \$660 million. This could represent a considerable figure of "pass through funds" from the Federal Government to subcontractors (table D-7).

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Table D-1. Intramural R&D performance by nonprofit organizations, by Federal and non-Federal sources of funds, character of work and sampling strata: fiscal year 1996

Character of work	N	Sampling strata					
		All	1	2	3	4	5
		1973 + certainty	FSS	Teaching hospitals	NTEE 68-targeted R&D <sup>1</sup>	Other PPS	
		233	72	128	5	22	6
[In millions of dollars]							
Total research & development....	7,063	2,860	2,484	179	1,163	377	
Federal funds.....	3,740	1,791	1,392	64	207	286	
Non-Federal funds.....	3,323	1,068	1,092	116	956	91	
Basic research.....	3,926	1,817	1,051	61	736	261	
Federal funds.....	2,041	1,093	625	23	52	248	
Non-Federal funds.....	1,885	724	426	38	684	13	
Applied research.....	2,059	786	746	85	354	88	
Federal funds.....	1,164	521	467	27	115	34	
Non-Federal funds.....	895	265	279	58	239	54	
Development.....	1,079	257	688	34	73	28	
Federal funds.....	536	177	300	14	39	5	
Non-Federal funds.....	544	79	387	20	34	23	

<sup>1</sup> Includes one performer that was originally on the NPO funder list, i.e., stratum 6.

**KEY:** FSS = Listed in the Code Book of the NSF survey of Federal Support to Universities, Colleges, and Nonprofit Institutions  
NTEE = National Taxonomy of Exempt Entities codes  
Other PPS = Other nonprofit organizations from IRS list that were sampled by probability proportional to size of gross annual expenditures  
N = Number of survey respondents  
NPO = Nonprofit organization

**NOTE:** Because of rounding, detail may not add to totals.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of R&D Funding & Performance by Nonprofit Organizations, 1996 and 1997.

Table D-2. Intramural R&D performance by nonprofit organizations, by Federal and non-Federal sources of funds, character of work and sampling strata: fiscal year 1997

Character of work and sampling strata. Fiscal year 1997							
Character of work	N	Sampling strata					
		All	1	2	3	4	5
			1973 + certainty	FSS	Teaching hospitals	NTEE 68-targeted R&D <sup>1</sup>	Other PPS
		233	72	128	5	22	6
		[In millions of dollars]					
Total research & development....	7,349	2,984	2,634	206	1,253	272	
Federal funds.....	3,709	1,888	1,391	71	210	149	
Non-Federal funds.....	3,640	1,096	1,243	135	1,043	123	
Basic research.....	4,004	1,888	1,110	70	798	137	
Federal funds.....	2,049	1,164	691	27	56	112	
Non-Federal funds.....	1,954	724	420	43	742	25	
Applied research.....	2,202	833	803	98	366	102	
Federal funds.....	1,207	548	488	29	111	32	
Non-Federal funds.....	995	286	315	69	255	69	
Development.....	1,143	262	721	39	89	33	
Federal funds.....	452	176	213	15	43	5	
Non-Federal funds.....	691	86	508	23	45	28	

<sup>1</sup> Includes one performer that was originally on the NPO funder list, i.e., stratum 6.

**KEY:** FSS = Listed in the Code Book of the NSF survey of Federal Support to Universities, Colleges, and Nonprofit Institutions  
NTEE = National Taxonomy of Exempt Entities codes  
Other PPS = Other nonprofit organizations from IRS list that were sampled by probability proportional to size of gross annual expenditures  
N = Number of survey respondents  
NPO = Nonprofit organization

**NOTE:** Because of rounding, detail may not add to totals.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of R&D Funding & Performance by Nonprofit Organizations, 1996 and 1997.



Table D-3. Intramural R&amp;D performance by nonprofit organizations, by sources of funds and sampling strata: fiscal year 1996

Number	Strata	Total	Federal Government	State and local governments	Nonprofit organizations	Universities & colleges	Industry	Other sources
	Description	[In millions of dollars]						
	Total, all strata.....	7,063	3,740	148	376	45	740	2,014
1	1973 respondents & certainty NPOs.....	2,860	1,791	57	170	9	290	542
2	Federal funding recipients (FSS).....	2,484	1,392	78	128	25	240	622
3	Teaching hospitals.....	179	64	7	1	--	24	84
4	NPOs targeted for R&D by 68 NTEE codes <sup>1</sup> .....	1,163	207	1	61	10	160	724
5	Other PPS.....	377	286	5	17	1	26	42

<sup>1</sup> Includes one performer that was originally on the NPO funder list, i.e., stratum 6.

**KEY:** -- = Less than \$0.5 million  
 NPO = Nonprofit organization  
 FSS = Listed in the Code Book of the NSF survey of Federal Support to Universities, Colleges, and Nonprofit Institutions  
 NTEE = National Taxonomy of Exempt Entities codes  
 Other PPS = Other nonprofit organizations from IRS list that were sampled by probability proportional to size of gross annual expenditures

**NOTE:** Because of rounding, detail may not add to totals.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of R&D Funding & Performance by Nonprofit Organizations, 1996 and 1997.

Table D-4. Intramural R&D performance by nonprofit organizations, by sources of funds and sampling strata:  
fiscal year 1997

Number	Strata	Total	Federal Government	State and local governments	Nonprofit organizations	Universities & colleges	Industry	Other sources
	Description	[In millions of dollars]						
	Total, all strata.....	7,349	3,709	173	411	48	823	2,185
1	1973 respondents & certainty NPOs.....	2,984	1,888	72	171	9	315	529
2	Federal funding recipients (FSS).....	2,634	1,391	86	125	27	274	731
3	Teaching hospitals.....	206	71	9	1	--	33	93
4	NPOs targeted for R&D by 68 NTEE codes <sup>1</sup> .....	1,253	210	1	94	8	151	788
5	Other PPS.....	272	149	5	21	3	51	44

<sup>1</sup> Includes one performer that was originally on the NPO funder list, i.e., stratum 6.

**KEY:** -- = Less than \$0.5 million  
NPO = Nonprofit organization  
FSS = Listed in the Code Book of the NSF survey of Federal Support to Universities, Colleges, and Nonprofit Institutions  
NTEE = National Taxonomy of Exempt Entities codes  
Other PPS = Other nonprofit organizations from IRS list that were sampled by probability proportional to size of gross annual expenditures

**NOTE:** Because of rounding, detail may not add to totals.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of R&D Funding & Performance by Nonprofit Organizations, 1996 and 1997.

Table D-5. Intramural R&D performance by nonprofit organizations, by field of science & engineering and sampling strata: fiscal year 1996

Number	Strata  Description	Fields of science and engineering										
		Total	Life sciences			Psychology	Environmental/ earth sciences	Physical sciences	Mathematics & computer sciences	Engineering	Social sciences	Other sciences
			Biological sciences	Agricultural sciences	Medical & health sciences							
		[In millions of dollars]										
	Total, all strata.....	7,063	805	22	4,257	61	242	229	240	491	294	423
1	1973 respondents & certainty NPOs.....	2,860	514	18	1,505	38	53	101	165	216	209	40
2	Federal funding recipients (FSS).....	2,484	131	3	1,359	23	44	125	74	269	74	384
3	Teaching hospitals.....	179	0	0	174	0	0	0	--	5	0	0
4	NPOs targeted for R&D by 68 NTEE codes <sup>1</sup> .....	1,163	159	0	846	0	145	3	--	1	8	0
5	Other PPS.....	377	0	0	374	--	0	0	0	0	3	0

<sup>1</sup> Includes one performer that was originally on the NPO funder list, i.e., stratum 6.

**KEY:**    --    = Less than \$0.5 million  
           NPO    = Nonprofit organization  
           FSS    = Listed in the Code Book of the NSF survey of Federal Support to Universities, Colleges, and Nonprofit Institutions  
           NTEE    = National Taxonomy of Exempt Entities codes

Other PPS = Other nonprofit organizations from IRS list that were sampled by probability proportional to size of gross annual expenditures  
**NOTE:** Because of rounding, detail may not add to totals.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of R&D Funding & Performance by Nonprofit Organizations, 1996 and 1997.

Table D-6. Intramural R&D performance by nonprofit organizations, by field of science & engineering and sampling strata: fiscal year 1997

Number	Strata  Description	Fields of science and engineering										
		Total	Life sciences			Psychology	Environmental/ earth sciences	Physical sciences	Mathematics & computer sciences	Engineering	Social sciences	Other sciences
			Biological sciences	Agricultural sciences	Medical & health sciences							
		[In millions of dollars]										
	Total, all strata.....	7,349	854	22	4,413	70	232	255	269	490	325	419
1	1973 respondents & certainty NPOs.....	2,984	534	19	1,565	43	51	101	193	201	233	46
2	Federal funding recipients (FSS).....	2,634	130	4	1,466	26	48	151	75	283	80	373
3	Teaching hospitals.....	206	0	0	201	0	0	0	--	5	0	0
4	NPOs targeted for R&D by 68 NTEE codes <sup>1</sup> .....	1,253	190	0	913	0	134	4	1	2	9	0
5	Other PPS.....	272	0	0	269	1	0	0	0	0	3	0

<sup>1</sup> Includes one performer that was originally on the NPO funder list, i.e., stratum 6.

**KEY:**        --        = Less than \$0.5 million  
                  NPO        = Nonprofit organization  
                  FSS        = Listed in the Code Book of the NSF survey of Federal Support to Universities, Colleges, and Nonprofit Institutions  
                  NTEE        = National Taxonomy of Exempt Entities codes  
                  Other PPS = Other nonprofit organizations from IRS list that were sampled by probability proportional to size of gross annual expenditures

**NOTE:**        Because of rounding, detail may not add to totals.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of R&D Funding & Performance by Nonprofit Organizations, 1996 and 1997.

Table D-7. Extramural R&amp;D funding by nonprofit R&amp;D performers, by sampling strata: fiscal years 1996 and 1997

Number	Strata	1996 and 1997	Number of NPOs reporting extramural funding		Funding of extramural R&D	
	Description		1996	1997	1996	1997
		N			[In millions of dollars]	
	Total, all strata.....	233	133	137	1,324	1,494
1	1973 respondents & certainty NPOs.....	72	50	54	617	722
2	Federal funding recipients (FSS).....	128	72	71	619	660
3	Teaching hospitals.....	5	2	3	25	24
4	NPOs targeted for R&D by 68 NTEE codes <sup>1</sup> .....	22	6	6	47	60
5	Other PPS.....	6	3	3	16	28

<sup>1</sup> Includes one performer that was originally on the NPO funder list, i.e., stratum 6.

**KEY:** N = Number of survey respondents  
 NPO = Nonprofit organization  
 FSS = Listed in the Code Book of the NSF survey of Federal Support to Universities, Colleges, and Nonprofit Institutions  
 NTEE = National Taxonomy of Exempt Entities codes  
 Other PPS = Other nonprofit organizations from IRS list that were sampled by probability proportional to size of gross annual expenditures

**NOTES:** Because of rounding, detail may not add to totals.  
 Extramural R&D funding includes all R&D contracts, subcontracts, all costs of R&D the NPOs contracted out or passed through to subrecipients, and R&D conducted by others outside the NPOs with funds distributed through or by the NPOs.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of R&D Funding & Performance by Nonprofit Organizations, 1996 and 1997.

